

FLUID  **LIFE**

EQUIPMENT RELIABILITY SERVICES

Extended Drain Interval Study

Mining Haul Truck



797 Mining Haul Truck

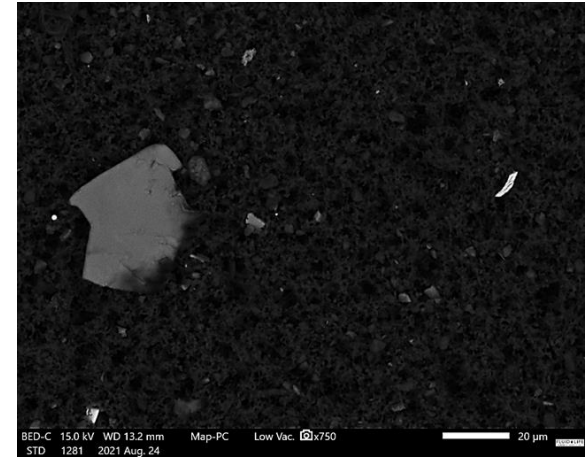
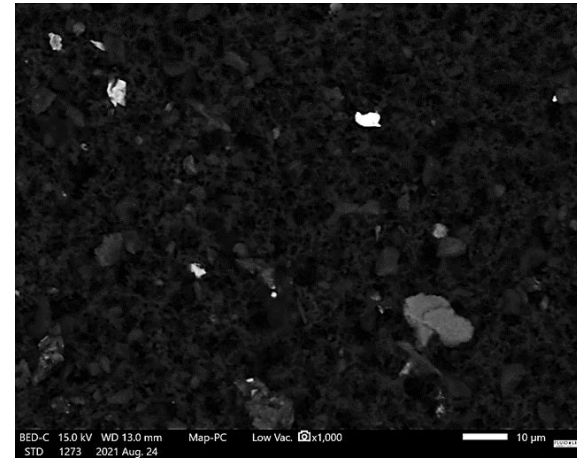
Case Study: Using SEM-EDS Wear Analysis to monitor oil condition

- Background
 - A large open pit mining company operates a fleet of approximately 80 active trucks
 - Company sampled their engines every 250 hours and changed oils every 500 hours
 - In spring/summer 2021, conducted an oil drain extension project
 - The goal was to determine if they could extend drains from 500 to 750-800 hours
- Project Overview
 - A select group of 797 trucks was included in the project
 - In addition to routine oil analysis testing, SEM-EDS wear debris analysis was done to monitor oil condition at the “extremes” (i.e., worst case scenario – 100+ hours past 750 planned interval)

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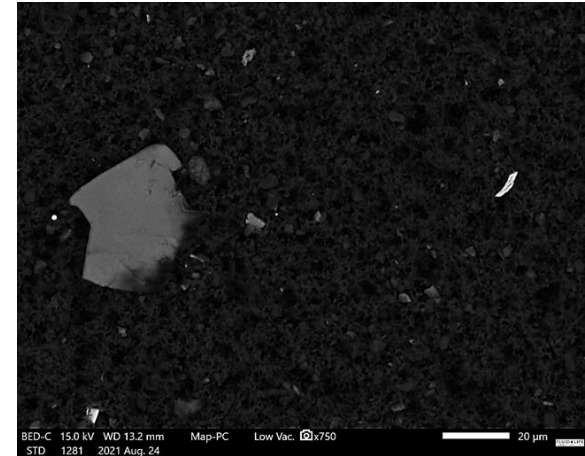
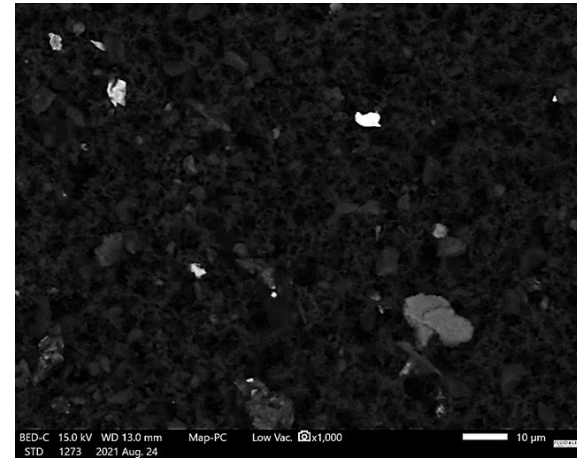
- Trial Actions
 - Engines were sampled at approx. every 250 hours during the trial
 - SEM-EDS analysis confirmed that 750+ intervals did not increase iron, lead, soot % contamination to dangerous levels across the selected test trucks
 - Across all trucks, oil condition was reasonable with regards to signs of wear and contamination, but not to the point of severe degradation



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- Outcomes
 - Traditional oil analysis coupled with SEM validated that oil drain intervals could be extended with negligible effects on oil condition and wear.
 - Implemented 750-hour engine oil drain interval
 - Modified oil drain schedule allowed for a reduction of six (6) “Level 1” PMs per year, which results in 480 less PMs per year for the entire truck fleet



Details

- **Asset Type:**
 - Caterpillar 797 Haul Truck
- **Component:**
 - CAT 797A 3524 Engine
- **Engine PM Interval**
 - Sampled every 250 hours
 - Previously oil changed every 500 hours
- **Oil Type:**
 - Premium Full Synthetic 15W40

